

A washing method of a boiling clothes washing machine

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Inventor(s): HO KYUNG [KR]; MOON [KR] +

Applicant(s): SAMSUNG ELECTRONICS CO LTD [KR] +

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The invention relates to a washing process for a washing machine, which exhibits an heater to the cooking of the washing water, equipped with a cook wash course, in particular a washing process for a washing machine equipped with a cook wash course, can become cleaned with whose assistance the laundry with washing water, which exhibits the degree of pollution of the fabrics or materials which can be washed appropriate temperature, whereby the cleaning effect can become increased.

Nowadays enzyme detergents are more available, in order to be able to obtain regarding the increased environmental pollution, in particular the water pollution, a better cleaning effect. The enzyme detergent with a washing machine with washing processes used designated as "a soft wash course" and improves something the cleaning effect. With this washing process with a soft wash course in detail washing water the washing machine tank supplied, the enzyme detergent in the washing water dissolved, the laundry becomes i.e. into the washing water inserted and then in the washing water soaked, whereupon the general washing operations become performed, the actual washing of the laundry, with the dirt of the laundry through alternate tricks of a Pulsators in forward direction and/or. Opposite direction abraded and/or. remote becomes, the discharge of the water, draining the laundry, supplies of water, rinsing the laundry out, the discharge of the water as well as draining the laundry.

The enzyme detergent shows however only then its action, if the water temperature on an appropriate value, z. B. 50 DEG C, held becomes, so that this activated is. With a conventional washing machine the laundry without heating of the washing water becomes soaked, which has an extension of the wash duration to the sequence. The actual desired cleaning effect is not to be expected thus.

Considering these problems a washing machine became developed, provided with which an heater is to the heating of the washing water in the washing machine tank. With this washing machine, which becomes subsequent designated as "washing machine with warm wash course", the washing water to approximately 50 DEG C becomes heated, so that increased thereby the cleaning effect can become with the a soft laundry. For laundry, the z. B. withstand high temperatures of for example 95 DEG C, can however no sterilization, deodorization and/or. Bleaching procedure performed become. From the warm water also expected cannot become that strong contaminated laundry exhibits the desired optimum cleaning temperature after the washing operation. It is accompanied of a sterilization, a deodorization and a bleaching effect, by experience of the user known that a cook wash course for extreme contaminated laundry is suitable, there a large cleaning effect, arises.

The invention is the basis the object to suggest a washing process for a washing machine equipped with cook wash course which exhibits an a soft wash course, with which the temperature of the washing water in dependence of the activation temperature of the enzyme detergent changed becomes.

Furthermore the washing water up to the boiling point is to become heated, in order to obtain a sterilization, a deodorization and a bleaching effect with the washing process. In addition the washing process is to be feasible despite increased cleaning effect within shorter time using a small washing water quantity.

This object becomes by the features dissolved indicated in the claim 1.

A favourable development of the invention is subject-matter of the Unteransprüche 2.

Thus if the cook wash course becomes selected, then washing water up to a level becomes supplied, which is in dependence of the laundry volume certain. The enzyme detergent becomes into the washing water given and the washing water using the heater up to one for the activation of the enzyme detergent of appropriate temperature heated, while the laundry is soaked over the heating season. Subsequent one becomes for the actual washing operation a Pulsator alternate in forward of and/or. Opposite direction rotated, in order to out-wash the dirt from the laundry, and the washing water becomes up to a level drained, submerged with which the laundry is still whole in the washing water. Thereupon the washing water as well as the laundry up to the boiling point becomes heated. After lapse of a certain period the heater becomes deenergized, whereupon the washing water discharged, which laundry dewatered, water a second time supplied, which laundry purged, which becomes waters discharged and the laundry dewatered, so that the cleaning procedures are completed. Thus the cook wash course major can with laundry, which withstands an high temperature, which is extreme contaminated and which is freed not yet of the color remainders and finds with white laundry, which requires a bleaching procedure, application.

On the other hand the a soft wash course is the similar cook wash course with exception of the water removal step and the water cook step. Therefore this wash course becomes major used for laundry, which became damaged with an high temperature and exhibits a small degree of pollution.

The invention becomes appended more near explained on the basis the drawing. It shows

Fig. 1 a washing machine control circuit, which is adapted to the washing process of a washing machine equipped with a cook wash course, and

Fig. 2A, 2B and 2C of flow charts, which clarify the washing process for the washing machine equipped with cook wash course.

A washing machine with cook wash course, suitable for the subsequent described washing process, points a vat, which is manufactured from refractory materials, which withstand temperatures of for instance over 100 DEG C unproblematically, and an heater with large power to the heating of a large amount at washing water up.

Fig. 1 shows a control circuit, which is 20 provided with a microcomputer, which steers the entire operation of the washing machine to the washing of laundry with boiling water a corresponding predetermined programme.

A power supply 21 is with a transformer T, a bridging iodine part of BD, condensers c1 and C2 as well as a precision automatic controller MOVES for rectifying the alternating current into a DC provided, so that the circuit a constant tension can become Vcc supplied.

A washing water temperature collection part of 22 consists of the thermistor 6 and a resistor g 1, in order to determine the temperature the vat (not shown) of the supplied washing water.

Function-select-hurry 23 selects the wash mode or the wash procedure as well as the operating times the corresponding respective mode or the respective procedure.

A drive control section 24 operates a number of loads bottom control of the microcomputer 20 the corresponding output signals of the washing water temperature collection part of 22 and function-select-hurries 23.

A steering wheel serving for the rotation of the motor in forward direction and/or. Driving part 25 includes an engine turned part 25A for the rotation of the motor in forward direction, triac T1, which becomes 24 driven by the output signal of the drive control section, and a resistor a R6.

An engine turned part 26A closes a control part 26 serving for the rotation of the motor in reverse direction for the rotation of the motor in counter and/or. Reverse direction, triac a T2, which become 24 driven by the output signal of the drive control section, and a resistor R7.

A water removal control part 27 includes water removal a solenoid valve 27A to the discharge of the washing water, triac T3, which becomes 24 driven of the output signal of the drive control section, and a resistor a R8.

A water supply control part 28 includes a wasserzufuhr solenoid valve 28A to supplies of the washing water, triac a T4, which become 24 driven of the output signal of the drive control section, and a resistor R9.

A heating facility control part 29 includes an heater 29A to the heating of the washing water, triac a T5, which become 24 driven of the output signal of the drive control section, and a resistor R10.

A water level detection part of 30 is with a pressure sensor HP and resistors R11 and R12 provided, in order to seize the level of the washing water which can be supplied.

A display part 31 shows the completion of each wash procedure, the function selection etc. on.

An opening/closure member 32 for the lid points a switch 5 for seizing opening and/or. Closing the lid and resistors R13 and R14 up.

A bolting device/release member 33 for the lid covers a Solenoid 33A for locking and/or. Release the lid, triac a T6, which become 24 driven of the output signal of the drive control section, and a resistor R15, so that the lid at the vat becomes locked during a cook wash course, an a soft wash course and a drainage procedure.

A thermostat 36 is between heating facility the control part 29 and a side of the transformer T connected, in order to interrupt with a temperature rise of the heater 29A or the washing water the power supply to the heater 29A.

As from the Fig. 2A, 2 and 2C apparent, an a soft wash course selected can become, if laundry is to become washed, the high temperatures does not withstand, but strong contaminated is.

With the step 200 the microcomputer 20 emits a control signal to the activation of the water supply control part 28, if the a soft wash course became selected. Therefore the water supply control part 28 washing water supplies the vat up to a water level with an initial routine 210, which is dependent of the volume (weight) of the laundry certain. This time the water level becomes exact 30 detected with the help of the water level detection part.

The initial routine 210 goes thereupon to an a soft routine 220 over, if the completion of the water supply becomes confirmed. An enzyme detergent becomes in the washing water dissolved and the microcomputer 20 the activated heating facility control part 29 over the drive control part 24 the activation of the heater 29A. The heater 29A heats the washing water up to one for the activation of the enzyme detergent of appropriate temperature X DEG C, for example 50 DEG C, while the laundry is soaked during the heating season in the washing water. If the a soft routine is terminated, then the actual wash routine becomes 230 performed, with which the heater becomes 29A deenergized and a Pulsator not shown in forward of and reverse direction the removal of the dirt from the laundry in rotation offset.

After completion of the actual wash course will a second water supply routine 240 performed, with that first the entire washing water discharged, the laundry dewatered and again fresh washing water up to a water level supplied becomes, which is in dependence of the volume of the laundry certain.

The second water supply routine 240 ignores then to a final routine 250, with that the laundry flushed, the washing water discharged and the laundry dewatered becomes. Thus the a soft wash course is completed.

On the other hand a cook wash course becomes selected, if laundry is to become washed, which withstands wash temperatures of over 95 DEG C, is strong contaminated or is with a bleaching procedure the required. The cook wash course corresponds to the a soft wash course up to the actual wash routine 230. After conclusion of the actual wash routine 230 will a water removal intermediate routine 260 performed, with the washing waters so long discharged will, until a water level is achieved, with which the laundry altogether in the washing water submerged is, in order to thus save energy and shorten the wash duration.

Subsequent one is changed over by the water removal intermediate routine 260 to a cook wash routine 270, with that the microcomputer 20 the heater 29A activated, so that the washing water as well as the laundry up to the boiling point becomes heated, whereby the boiling point, the z. B. over 95 DEG C lies, a temperature represents, with which a sterilization, a deodorization and a bleaching effect achieved can become. After expiration of a predetermined period the heater 29A becomes with heating facility a deactivation step 280 deenergized. Subsequent one becomes the second water supply routine 240 and thereupon the final routine 250 performed, whereby the cook wash course is completed. It is to be noticed that both with the a soft wash course and with the cook wash course not only a particular enzyme detergent can become, but by cover of a broader temperature range also another enzyme detergent used.

Like managing described, the a soft wash course a bottom temperature performed, which guarantees an activation of the enzyme detergent, becomes during the cook wash course a sterilization, a deodorization or bleaches of the laundry possible.



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[71] 申请人 三星电子株式会社

地址 韩国京畿道水原市

[72] 发明人 文敬镐

[74] 专利代理机构 上海专利事务所

代理人 沈昭坤

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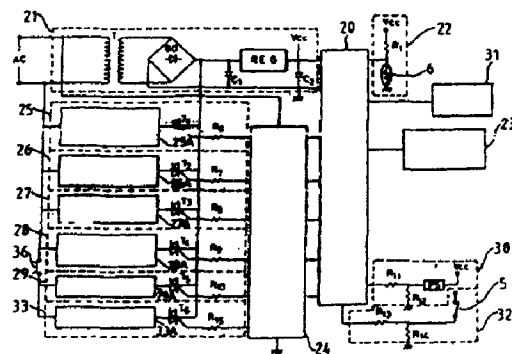
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[54] 发明名称 沸水洗衣机的洗涤方法

[57] 摘要

一种带有加热器的沸水洗衣机的洗衣方法, 该方法包括: 将加酶洗涤剂溶于洗涤水中、将洗涤水加热到激活加酶洗涤剂的温度和将欲洗的衣服浸润的方法及将加酶洗涤剂溶解在洗涤水中的其他方法。将欲洗的衣服同洗涤水一同加热到沸点, 据此实现消毒、脱色和漂白、节省了洗涤水量, 缩短了洗涤时间。



<26>

1、一种设有加热器的沸水洗衣机的洗衣方法，该方法包括：

按所选的浸润洗涤和沸水洗涤方式而予供水的第一供水步骤及根据欲洗衣服重量而确定的水位第一次向桶内供洗涤水；浸润洗涤程序，该程序包括：加热器加热所供给的洗涤水，将该洗涤水的水温维持在激活加酶洗涤剂的适宜温度并将浸润衣服放入洗涤水中；关闭加热器进行实际洗涤并搅拌衣服；进行沸水洗涤程序包括：中间的排水程序，该程序包括：判断是选取浸润洗涤还是煮沸洗涤方式的步骤，和根据衣服体积而确定的沸水洗涤水位排入洗涤水；

煮沸步骤，该步骤为将洗涤水加热到用热水洗衣的沸腾温度；

关闭加热器；

第二供水程序，该程序包括：第一次排洗涤水，将衣服进行水并再按衣服的体积而确定的水位供入新鲜水，和

最终程序，该程序包括如下步骤：漂洗、第二次排放水和第二次脱水；及未予选择沸水洗涤的其他程序，该程序包括：第二次供水程序，排放洗涤水，脱水并再按衣服体积而定的水位向桶内供新鲜水，和最终程序，该程序包括如下步骤：漂洗、第二次放水和第二次脱水。

2、一种根据权利要求 1 的沸水洗衣机的洗衣方法，其中

所说沸水洗衣机用于各种加酶洗涤剂。

沸水洗衣机的洗涤方法

本发明涉及沸水洗衣机的洗涤方法，该洗衣机设有用于煮沸洗涤水的加热器，具体讲，本发明涉及按织物和布料脏的程度而采用的适宜水温的洗涤水于沸水洗衣机中的洗涤方法，该法可使洗涤效果得到改善。

面对环境污染，尤其是水质污染日趋严重的社会问题，目前研制的加酶洗涤剂的优越性就更加突出了，加酶洗涤剂是通过称之为：“浸润洗涤”的洗涤方法而用于洗衣机的。这可使洗涤效果在一定程度上得到改善。换言之，浸润洗涤包括如下步骤：向洗衣机桶内放洗涤用水、将加酶洗涤剂溶于洗涤水中、把衣服放入洗涤水中并将其浸于洗涤水中后再依次进行一般的洗涤步骤：顺展和逆时针方向转动搅拌叶轮以从衣服上洗去脏物、排水、脱水（甩干）、供水、漂洗、排水、脱水。

然而，只有当水温保持在能使加酶洗涤剂本身为活化态时（如 50℃ 时），该洗涤剂才呈现出其性能。由于惯用的洗衣机浸润洗涤时不对洗衣水进行加热，延长了洗涤时间，而且，也不能达到人们所期待的洗涤效果。

考虑到上述问题，业已研制了带有在桶中加热洗涤水的加热器的洗衣机。本说明书中将称此洗衣机为将洗涤水加热到 50℃ 左右的“温水洗衣机”，这种洗涤方法可使浸润洗涤的净化

效果得到改善。但是对于洗涤那些能耐如 95℃ 左右高温的衣服而言，该法无法实现消毒、脱色及漂白的目的。对特别脏的衣服而言，温水洗涤也达不到人们所期望的最佳洗净效果。众所周知，用户的经验表明：如果洗特别脏的衣服，宜采用煮沸法，这样可在诸如消毒、脱色及漂白等方面获得较好的洗涤效果。

本发明的目的是提供一种可根据加酶洗涤剂活化温度来改变洗涤水温的沸水洗衣机的洗衣方法，方法包括浸润法。

本发明的另一目的是提供一种将洗衣水加热到沸点具有消毒、脱色和漂白效果的沸水洗衣机的洗衣方法。本发明的另一目的是提供一种用水少，洗涤时间短的可使洗涤效果得到改善的沸水洗衣机的洗衣方法。

根据本发明的带加热器的沸水洗衣机洗衣方法包括以下步骤：视选择的浸润方式和沸水洗涤方式进行第一次供水，第一次向桶中供水的水位视衣服量而定；浸润步骤，用加热器将供给的洗涤水加热，将水温维持在激活酶洗涤剂的适宜温度内，把要洗的衣服浸在洗衣桶中；实际洗涤步骤，关掉加热器，搅拦衣服；和连续进行两个程序：一个程序是：如采用沸水洗涤，它包括：根据所选择的浸润方式或沸水洗涤方式而进行的中间排水步骤，和根据洗衣量而确定水位排入洗涤用水；将洗涤水加热到用热水洗涤衣服的沸腾温度；关闭加热器；第二次供水包括：排放第一次洗涤用水、将衣服脱水并按衣服体积而确定的水位向桶中放入新的洗涤用水、漂洗、排水、脱水；和——另一程序是，如果不采用沸水洗涤，该程序包括：第二次供水步骤有：排去第一次洗涤水、脱水（对衣服）及根据衣服体积确定的水位向桶中供给新的洗涤用水，相继进行漂洗、

排放水、脱水。

即是说，如采用沸水洗涤，洗涤水的水位应根据衣服的量来确定，然后放入加酶洗涤剂，用加热器将洗涤水加热到激活加酶洗涤剂的温度，加热时将衣服浸润，接着依次顺时针和反时针方向转动搅拌叶轮将污物从衣服上洗去，然后再放入洗涤水直至衣服能全部浸于其中的水位，把洗涤水同衣服一起加热到沸腾。待一定时间后，关掉加热器（停止加热）、放出水后将衣服进行脱水、放入水、漂洗和脱水到完全净化时为止。由此可知，沸水洗涤法主要用于能耐高温、特别脏、不掉色的及需漂白衣服。

另一方面，除中间的排水和煮沸水步骤外，浸润洗涤方式同沸洗涤法类似。因此，浸润洗涤法主要用于不耐高温及不太脏的衣服。

下面将参照附图对本发明作较详细的解释。

图 1 为根据本发明的沸水洗衣机洗衣方法的总的控制线路图。

图 2A、2B、2C 为根据本发明的沸水洗衣机洗衣方法的流程图。

如图所示，根据本发明的沸水洗衣机包括由在 100°C 以上不会损坏或着火的耐热材料制成的桶及能加热大量洗涤水的加热器。

如图 1 所示，本发明包括用微机 (20) 提供的控制线路根据预先确定的程序控制沸水洗衣机的全部操作。

电源供给部分 21 包括变压器 T_1 ，二极管电桥 BD，电容 C_1 和 C_2 以及将交流电变为直流电以向系统供给稳定电压 V_{cc} 的精确调节器。

洗涤水温测定部分 22 包括热控管 6 和把排入桶（未示出）的洗涤水温度与电信号的电阻 R_6 。

功能控制部分 23 包括根据每一方式或程序选择洗涤方式或程序以及操作时间。

驱动控制部分 24 使许多操作根据洗涤水温探测部分 22 和功能选择部分 23 输出的信号在微机 20 控制下运行。

向前驱动的马达部分 25 包括用于向前转动马达的向前转动驱的部分 25A，由控制驱动部分 23 输出的信号启动的三端双向可控硅开关 T_1 、电阻 R_6 组成。

反向驱动马达部分 26 包括使马达反向转动的反向驱动马达部分 26A，由驱动控制部分 23 输出的信号控制的三端双向可控硅开关 T_2 电阻 R_7 。

排水驱动部分 27 包括排放洗涤水的电磁阀 27、由驱动控制部分 23 输出的信号启动的三端双向可控硅开关 T_3 、电阻 R_8 。

供水驱动部分 28 包括供水电磁阀 28A、由驱动控制部分 23 输出的信号启动的三端双向可控硅开关 T_4 、电阻 R_9 。

加热器操作部分 29 包括洗涤水加热器 29A、由驱动控制部分 23 输出的信号控制的三端双向可控硅开关 T_5 、电阻 R_{10} 。

水位指示部分 30 包括压力传感器 PS 和将供水的水位变为电信号的电阻 R_{11} 和 R_{12} 。

显示部分引显示每一洗衣程序的完成、功能选择等情况。

桶盖开启 / 关闭部分 32 包括传感桶盖开启 / 关闭的传感开关 5 和电阻 R_{13} 和 R_{14} 。

桶盖锁住 / 松脱部分 33 包括桶盖锁住 / 松脱电磁阀 33A，受驱动控制部分 23 输出信号控制的三端双向可控硅开关 T_6 、电阻 R_{15} ，这将在沸水洗涤时、浸润洗涤时及脱水时即将桶上的桶

盖锁住了。

连于加热器操作部分 29 和变压器 T 一侧的恒温 36 用以在超过加热器的预定温度或洗衣水的预定温度时切断加热器 29A 的电源。

如图 2A、2B 和 2C 所示，如要洗的衣服不耐高温且相当脏，即选浸润洗衣法。如选择此法，微机 20 输出供水控制信号使供水驱动部分 28 运行，因此，按最初程序 210，使水驱动部分 28 将洗涤水送到桶中直到达到按洗衣的体积所确定的水位为止。此时，水位是由水位传感部分 30 准确控制的。

供水完成后，继程序 210 后是程序 220，其中，把准备的加酶洗涤剂溶于洗涤水中，微机 20 通过驱动控制部分 24 开启加热器操作部分 29 使加热器 29A 运行。29A 即将洗涤水加热到适宜的激活加酶洗涤剂的温度 $X^{\circ}\text{C}$ （如 50°C ），此时衣服浸润了洗涤水中，浸润完成后便进入实际洗涤程序 230，同时关掉加热器 29A，转动（正反方向）脉动器（未示出）以洗去衣上脏物。

洗完后即进行下一个程序 240，此时将水全部排空、将衣服脱水，供入新鲜水到根据衣服后确定的水位。

程序 240 后，即进行程序 250，此时进行漂洗、排水、脱水、随之结束浸润洗涤。

另一方面，如所须洗的衣服耐高温（ 95°C 以上），相当脏且需漂白时，则采用沸水洗涤。所进行的沸水洗涤直至实际洗涤程序 230 都类同浸润洗涤，中间的排水程序 260 是将洗涤水排到其水位能衣服全部浸于其中的程充，这样能节约能量，使洗涤更加迅速。

继程序 260 后是程序 270，此程序中，在微机 20 控制下接

通加热器，使洗涤水同衣服一道加热到沸点（如 95℃），在此温度下能获得消毒、脱色和漂白效果。待预定时间后，加热器关闭步骤 280 使加热器 29A 停止加热。其后按预定程序执行第二次供水程序 240 和最终程序 250 以完成煮沸洗涤。因此，由于温度范围较宽，无论是浸润洗涤还是沸水洗涤不仅能使用某种特定的加酶洗涤剂也能使用其他的加酶洗涤剂。

如上所述，如用加酶洗涤剂时，根据本发明的方法，在能激活加酶洗涤剂的洗涤水温下进行浸润洗涤，而用热水对衣服进行沸水洗涤可以获得消毒、脱色和漂白诸效果是可以预料到的。

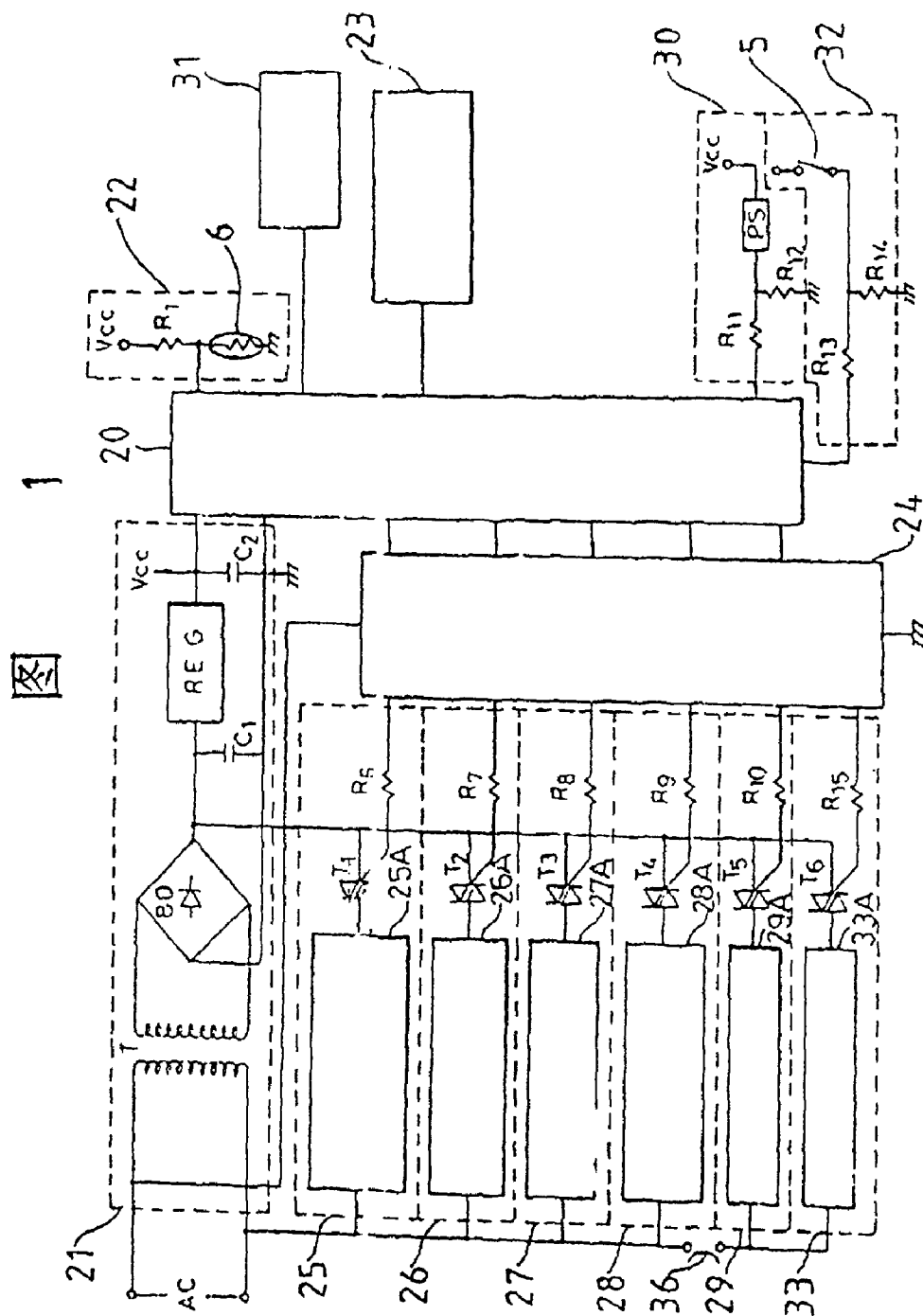


图 2(A)

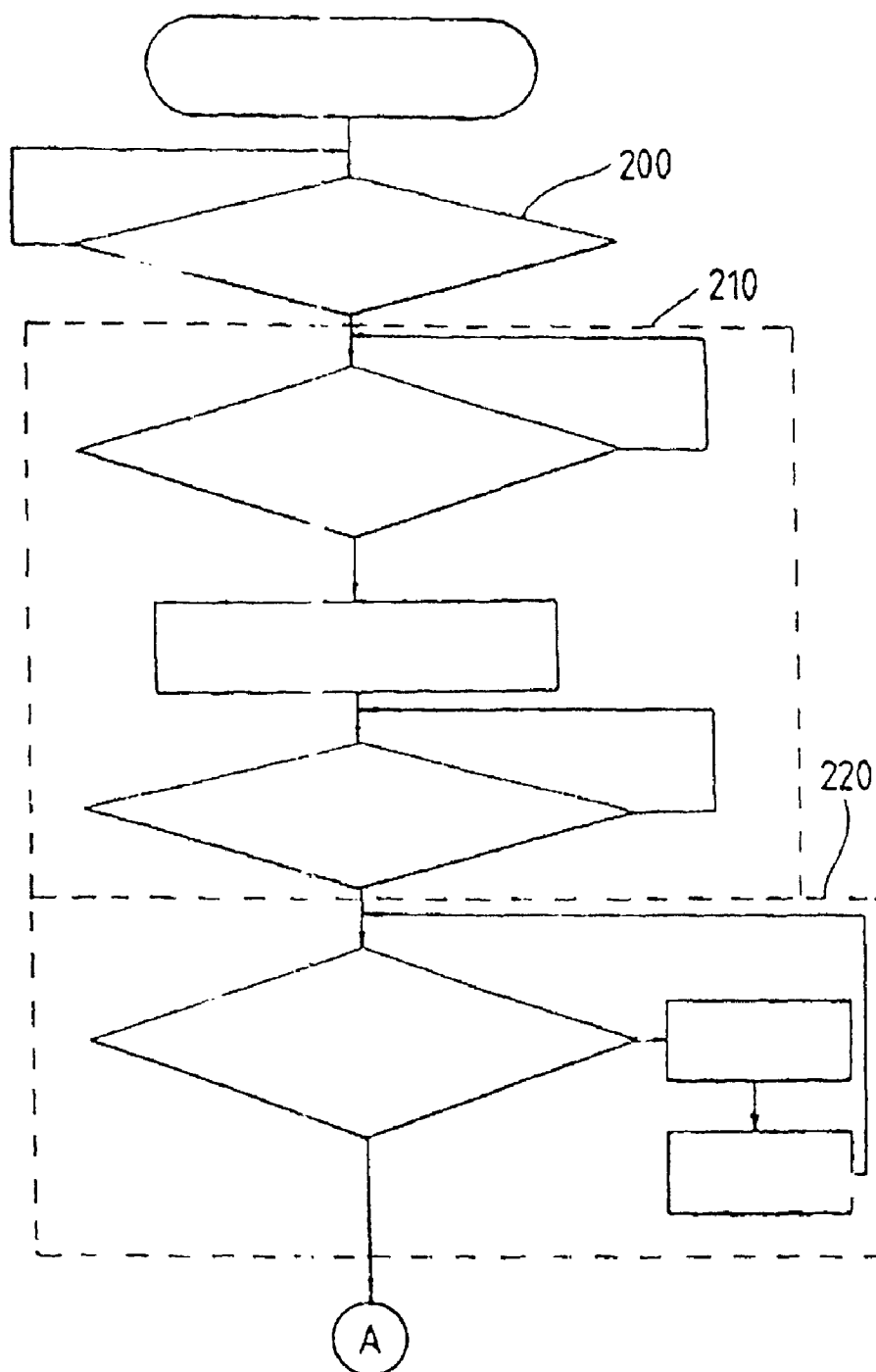


图 2(B)

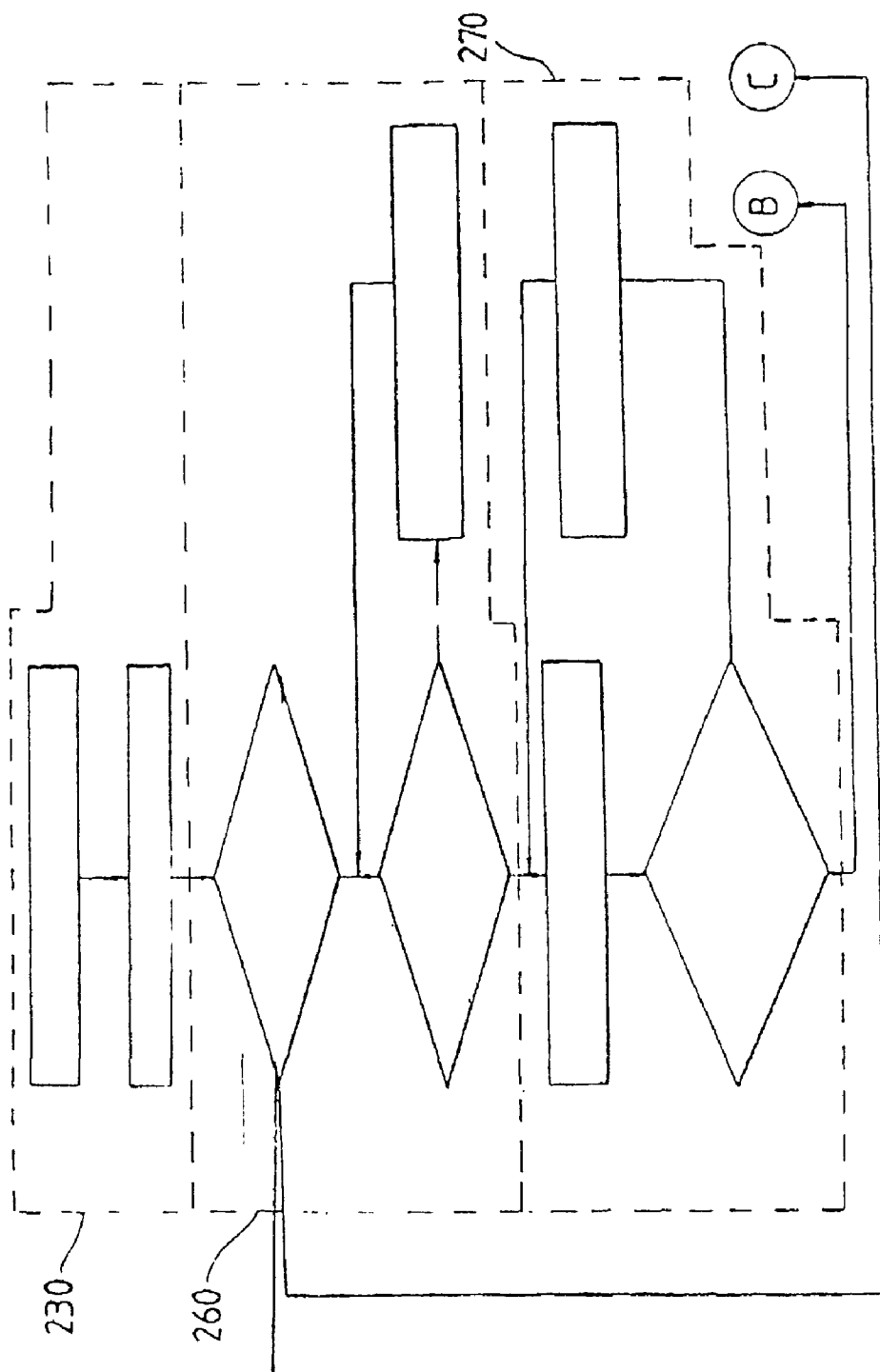


图 2(C)

